bin_image_merge

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Abstract

This task produces binned count rate and count-rate uncertainty images for merged observations using the output of merge_comp_xmm.

1 Instruments/Modes

Instrument	Mode
EPIC	Imaging

2 Use

pipeline processing	no
interactive analysis	yes

3 Description

`bin_image_merge` produces binned count rate and count-rate uncertainty images for merged observations using the output of the task merge_comp_xmm. For each unmasked and binned pixel, the program will determine the average count rate and the count rate uncertainty. The assumption is that the uncertainty is dominated by the counting statistics and the the systematics of the background modeling. Binning by 1, 2, 4, 8, 16, or 32 can be selected.

Warning and requirements: `bin_image_merge` is part of the package *esas*, integrated into SAS, but (still) limited to work within the *esas* data reduction scheme. This is specially true wrt input files structure and names. In particular, `bin_image_merge` assumes that another individual observations have been processed and subsequently mosaicked by the task merge_comp_xmm.

4 Parameters

This section documents the parameters recognized by this task (if any).

Parameter	Mand	Type	Default	Constraints

thresholdmasking	yes	real	0.02	

The scale factor for excluding regions from the smoothing based on a mask image. In the default mode the average exposure is calculated and then any pixel with exposure less than fraction*average value is excluded.

nbands	yes	int	2	

Number of bands to be combined

elowlist	yes	int	350 800	

Low energy for successive bands in eV

ehigh	yes	int	800 1000	

High energy for successive bands in eV

binning	yes	int	1	

Binning control with `1` for no binning, `2,4,8,16,32` for binning by 2, 4,8,16,32.

withpartcontrol	yes	bool	yes	

Particle background control, "yes" to subtract the model particle background image.

withsoftcontrol	yes	bool	yes	

Soft proton background control, "yes" to subtract the soft proton background image.

withoffsetbkgcontrol	yes	bool	yes	

Offset background control, "yes" to subtract the offset background image. This is a feature currently under development and is not yet functional.

mask	yes	dataset	mask.fit	

Mask image file name.

5 Input Files

The exposure corrected mosaicked images, products from running `merge_comp_xmm`, following the particular nomenclature used in the esas package, eg.: *obj-im-350-800.fits* for a mosaicked image with the first band in that spectral range.

6 Output Files

- `rate-`*elow*`-`*ehigh*`.fits` – The binned count rate image for the selected energy band (*elow* and *ehigh*) of the of the mosaicked field.
- `sig-`*elow*`-`*ehigh*`.fits` – The binned count rate uncertainty image for the selected energy band (*elow* and *ehigh*) of the mosaicked field.

7 Algorithm

8 Comments

References